

Claims

- [c1] An electrophoretic medium comprising a plurality of capsules, each capsule comprising an internal phase comprising a plurality of electrophoretically mobile particles in a gaseous suspending medium, and a capsule wall surrounding the internal phase.
- [c2] An electrophoretic medium according to claim 1 wherein each capsule comprises a single type of electrophoretically mobile particle, each capsule having a pair of opposed surfaces differing in size.
- [c3] An electrophoretic medium according to claim 1 comprising two types of particles having differing optical characteristics and differing electrophoretic mobilities.
- [c4] An electrophoretic medium according to claim 3 wherein one type of particle has substantially zero electrophoretic mobility.
- [c5] An electrophoretic medium according to claim 3 wherein the two types of particles bear charges of the same polarity but differ in electrophoretic mobility.
- [c6] An electrophoretic medium according to claim 1 wherein

the capsule walls of a plurality of capsules are merged with one another, so that the medium comprises a plurality of bubbles, each containing the electrophoretically mobile particles and the gaseous suspending medium, the bubbles being dispersed in a continuous solid phase.

- [c7] An electrophoretic medium according to claim 1 wherein the gaseous suspending medium comprises carbon dioxide.
- [c8] An electrophoretic display comprising an electrophoretic medium according to claim 1 and at least one electrode disposed adjacent the electrophoretic medium and arranged to apply an electric field to the medium.
- [c9] A process for producing an electrophoretic medium according to claim 1, the process comprising:
 - forming a medium comprising a plurality of capsules, each capsule comprising an internal phase comprising a plurality of particles in a liquid suspending medium, and a capsule wall surrounding the internal phase; and
 - replacing the liquid suspending medium with a gaseous suspending medium.
- [c10] A process according to claim 9 wherein the replacement of the liquid suspending medium is effected by evaporating the liquid suspending medium while diffusing a

gas suspending medium into the capsules.

- [c11] A process according to claim 9 wherein the formation of the medium comprising the liquid suspending medium is effected by forming a plurality of droplets, each comprising the liquid suspending medium and the particles, in a continuous phase comprising a curable binder, and thereafter at least partially curing the curable binder.
- [c12] A process for producing an electrophoretic medium according to claim 1, the process comprising:
 - admixing particles with a material capable of generating gas;
 - dispersing the mixture of particles and gas-generating material in a curable binder;
 - at least partially curing the binder; and
 - exposing the gas-generating material to conditions effective to cause generation of gas therefrom, thereby causing the formation within the binder of capsules containing the particles.
- [c13] A process according to claim 12 wherein the gas-generating material comprises a volatile liquid, and the gas is formed by evaporation of the liquid.
- [c14] A process according to claim 12 wherein the gas is generated by reaction of the gas-generating material with a

material present in the binder.

- [c15] A process for producing an electrophoretic medium according to claim 1, the process comprising:
 - admixing a material capable of generating gas with a wall-forming material;
 - exposing the gas-generating material to conditions effective to cause generation of gas therefrom, thereby causing the formation of gas-filled cavities within the wall-forming material; and
 - introducing solid particles into the cavities.
- [c16] A process for producing an electrophoretic medium according to claim 1, the process comprising:
 - admixing particles with a supercritical fluid;
 - surrounding the mixture of particles and supercritical fluid with a capsule wall, thereby forming a capsule; and
 - reducing the pressure on the capsule below the critical pressure of the supercritical fluid, thereby causing the supercritical fluid to form a gaseous suspending medium within the capsule.
- [c17] A process according to claim 16 wherein the surrounding of the mixture of particles and supercritical fluid with a capsule wall is effected by forming a droplet of the mixture in a curable binder, and at least partially curing the

binder before reducing the pressure below the critical pressure.

- [c18] A process according to claim 16 wherein the surrounding of the mixture of particles and supercritical fluid with a capsule wall is effected by forming a droplet of the mixture in a liquid phase immiscible with the supercritical fluid, and forming the capsule at the interface between the supercritical fluid and the liquid phase.
- [c19] A process according to claim 16 wherein the supercritical fluid is carbon dioxide.
- [c20] A process according to claim 16 further comprising replacing the gaseous suspending fluid formed from the supercritical fluid with a different gaseous suspending medium.